

WHAT IS CLAIMED IS

1. A hand-held electronic device having a device upper face, a device bottom face, and a device periphery between said upper face and said bottom face, comprising:

a carrier formed of insulative material and having upper and lower carrier faces;

a plurality of circuit components mounted on said carrier;

said carrier having a plurality of recesses with each of said plurality of electronic components lying in and fixed in position in one of said recesses;

said carrier having a thickness of at least 2 mm between said carrier faces, said carrier having a carrier side edge extending in a closed loop, and said carrier having an area within said side edge that occupies at least 75% of the entire area of said electronic device within said device periphery as seen in a plan view taken from above said device upper face.

2.

The device described in claim 1 wherein:

said plurality of recesses include a plurality of edge recesses formed in said side edge of said carrier, said edge recesses being open at the side edge of the carrier.

3.

The device described in claim 1 wherein:

when said circuit components are mounted in said carrier, said carrier with said circuit components occupies at least 90% of the entire area of the electronic device as seen in a plan view.

4.

The device described in claim 1 including:

a first circuit board having a thickness less than half the thickness of said carrier;

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said first circuit board having a first face that lies facewise adjacent to a face of said carrier, said circuit board having a plurality of conductive traces on said first face, and including a plurality of resilient sheet metal blades that connect a first of said components to said conductive traces, said blades being resiliently deflected by said first circuit board being moved facewise adjacent to said carrier.

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The device described in claim 4 including:

a second circuit board with a second face that lies facewise adjacent to said carrier first face, said second circuit board having a plurality of conductive traces coupled to said components.

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The device described in claim 1 including:

a first circuit board with a first face that lies facewise adjacent to a face of said carrier, said circuit board having a plurality of conductive traces on said first face, and at least a first plurality of said components each has a plurality of resilient sheet metal contacts with resilient tails that bear against said traces, said circuit board having a thickness less than half the thickness of said carrier.

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The device described in claim 1 wherein:

said carrier has a card-passing slot for passing a smart card that has an active face with contact pads thereon, said card-passing slot extending from said side edge, said carrier having walls integral with the rest of said carrier and lying above and below said card-passing slot, to guide a card inserted into said slot;

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one of said recesses is a card connector-holding recess that extends from said upper carrier face and that intersects said card-passing slot;

10 a card connector lying in said card connector-holding recess, said card connector including a plurality of sheet metal contacts with deflectable pad-engaging ends positioned in horizontal alignment with said card-passing slot to be deflected by a card inserted through said card passing slot.

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The device described in claim 1 wherein:
a majority of said side edge of said carrier is metal plated.

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A hand-held electronic device comprising:
a carrier which is formed of a plate of insulative material, said carrier having first and second opposite carrier faces and a side edge;
said carrier having a plurality of recesses;
a plurality of circuit components each lying in one of said recesses and having resilient contact fingers projecting beyond said said second face;
a first circuit board which has first and second opposite board faces, said first circuit board having a smaller thickness than said carrier, said board first face lying adjacent to said second carrier face and said board first face having a plurality of conductive traces thereon, said contact fingers engaging said traces.

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The device described in claim 9 wherein:
said first and second carrier faces are respectively upper and lower faces;
said carrier has a card-receiving slot extending into said side edge, and one of said recesses extends through the thickness of said carrier and intersects said card-receiving slot.

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The device described in claim 9 wherein:
a majority of said side edge of said carrier is coated with a metal plating.

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~~12.~~ The device described in claim 9 wherein:

said carrier has a thickness of at least three millimeters between said first and second carrier faces.

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~~13.~~ A hand-held electronic device that includes an electronic circuit, and that has a periphery, comprising:

a carrier formed of a plate of insulative material having a thickness of at least 2 mm and having upper and lower faces, said carrier having about the same periphery as said electronic device, and said carrier having a plurality of recesses;

a plurality of circuit components of said electronic circuit each fixed in position in one of said recesses, each of said circuit components having a plurality of terminals;

a circuit board having a plurality of conductive traces and having a first face lying facewise adjacent to one of said carrier faces;

means for connecting said terminals of said circuit components to said traces, including deflected resilient contact blades.

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~~14.~~ The device described in claim 13 wherein:

said resilient contact blades are permanently fixed to said circuit components and resiliently press against said traces.